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ABSTRACT

This fifth in a series of eight modules for a course titled Quality Assurance Practices describes the essential elements of a nonconforming material control system, including purpose and application. The module follows a typical format that includes the following sections: (1) introduction, (2) module prerequisites, (3) objectives, (4) notes to instructor/student, (5) subject matter, (6) materials needed, (7) procedures, (8) data table, (9) reference materials, (10) test. (The course is one of fifteen technical courses for the second year of a two-year postsecondary curriculum in Nuclear Quality Assurance/Quality Control Technology.) (LRA)

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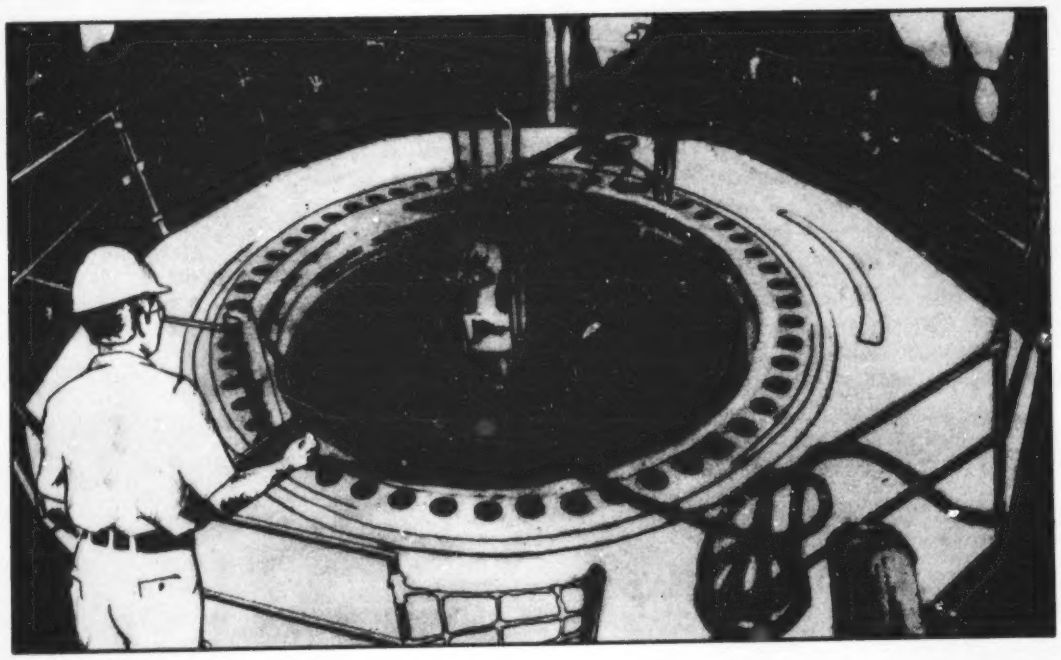
NUCLEAR TECHNOLOGY

COURSE 31 QUALITY ASSURANCE PRACTICES

MODULE 31-5 Nonconforming Materials



CE 024 289

GENERAL PHYSICS CORPORATION
Columbia , Maryland

COURSE MODULES

COURSE 31 QUALITY ASSURANCE PRACTICES

Module 31-1	Overall Quality Assurance Program
Module 31-2	Vendor Qualification
Module 31-3	Receiving Inspection
Module 31-4	Identification, Storage and Handling of Components, Parts and Materials
Module 31-5	Non-Conforming Materials
Module 31-6	Certification and Qualification of Quality Control Inspectors
Module 31-7	Auditing for Quality Assurance
Module 31-8	Document Handling, Storage and Retrieval for Quality Assurance

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This module was prepared for General Physics Corporation by Jim Pritchard and John Espy, General Physics Corporation.

GENERAL PHYSICS CORPORATION

1979

INTRODUCTION

The Nuclear QA/QC technician serves an important role with respect to nonconformances. First, it is this technician who may detect the nonconformance and report it. The report must furnish all necessary information to permit another organization to determine what actions will be taken. Secondly, the QA/QC technician may be responsible to release a nonconforming item for use after it has been corrected. Finally, the QA/QC technician is frequently involved in preparing nonconforming material control system procedures and with auditing for compliance with these procedures.

While an effective quality assurance program is aimed toward preventing the generation of nonconformances, deficient hardware can be expected to occur. Therefore, the quality assurance program must include ample inspections and tests to detect nonconformances that may occur. Once an item is found to be nonconforming, the nonconforming material control system insures that it will either not be used or that it will be corrected prior to its use.

This module describes the essential elements of a nonconforming material control system, including their purpose and application.

MODULE PREREQUISITES

The student shall have completed all previous modules of Course 31.

OBJECTIVES

Upon completion of this module, the student/trainee can:

1. Define the terms nonconformance, identification, documentation, segregation, disposition, and notification as they pertain to the nonconforming material control system.
2. State the overall purpose of the nonconforming material control system.
3. Name five essential elements of a nonconforming material control system and describe the role of each.
4. Describe methods of identifying nonconforming items.
5. Describe the types of information typically documented by the nonconformance report.
6. Name four types of dispositions of nonconformances and describe each.
7. Name two notifications a company makes to external parties and state the purpose of each.
8. State the purpose of hold notices, stop work orders, and conditional releases.
9. Determine to whom nonconformance reports are best addressed.
10. Recognize the essentiality of follow-up actions on a nonconforming item.
11. Learn which individual or section can accept responsibility for dispositioning nonconformances.

NOTES TO INSTRUCTOR

The activities suggested by this module may require the use of typical procedures for the control of nonconforming materials. Copies of such procedures may be obtained from nearby nuclear companies such as utilities, construction contractors, and component suppliers.

NONCONFORMING MATERIALS CONTROL SYSTEM

Definition of Nonconformance

Nonconformance is defined as a deficiency in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminate. Characteristic refers to any property or attribute of an item that is distinct, describable and measurable. Examples of characteristics include materials properties, dimensions, configurations, assemblies and functions. Documentation refers to any written or pictorial information describing, defining, specifying, reporting or certifying activities, requirements, procedures or results that effect the characteristics of an item. Examples include drawings, specifications, inspection reports, and test reports. Procedure refers to written instructions whose execution affects or determines the characteristics of an item. Examples include manufacturing, inspection, test, installation, startup, operating and maintenance procedures. As can be seen in these definitions, the term nonconformance is always related to hardware. Either the hardware itself does not comply with design requirements or a deficiency in documentation or procedure renders it impossible to determine that the hardware complies with design requirements, or the design requirement is in error.

Purpose of Nonconforming Material Control System

The quality assurance program is intended to prevent and detect nonconformances. While prevention of nonconformances and detection of nonconformances appear to be opposite objectives, reality forces the use of both objectives and frequent comparison of their achievement. When one considers what effort would be required to absolutely

prevent any nonconformance, the magnitude of the effort presents costs that outweigh the benefits. If not all nonconformances can be reasonably prevented, the quality assurance program should enable detection of nonconformances which do occur. Because nonconformances also represent costs in repair, rework, or replacement, the number and severity of nonconformances influence the level of effort to prevent them. That is, when numerous or costly nonconformances are being detected, more effort is placed on their prevention.

From the above discussion, it is concluded that nonconformances may occur from time to time and that the quality assurance program detects such nonconformances. While the number and severity of nonconformances should be minimal it is imperative that the quality assurance program prevent inadvertant use of items which are found to be nonconforming. Therefore, the purpose of the nonconforming material control system is to control nonconforming items from the point of their identification to the point of their correction in order to prevent the inadvertant use of nonconforming items.

Five Essential Elements

The nonconforming material control program consists of five essential elements. These essential elements are (1) Identification, (2) Documentation, (3) Segregation and Storage, (4) Disposition, and (5) Notification.

Each company describes in its quality assurance procedures the responsibilities and methods of implementing the essential elements of control of nonconforming materials. The overall process is illustrated by the flow charts in Figure 31-5-1.

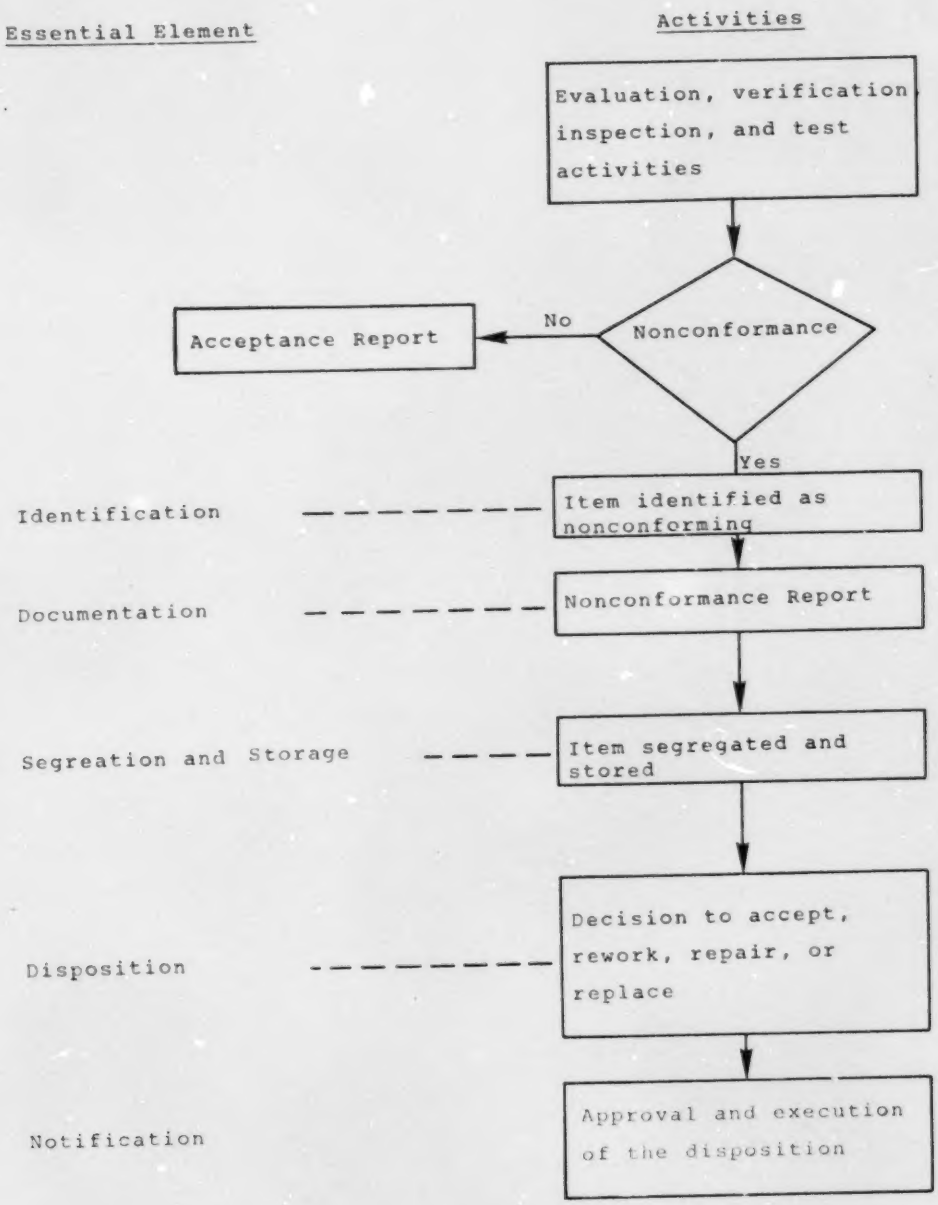


Figure 31-5-1. Flow Chart of Nonconforming Material Control Activities

ESSENTIAL ELEMENTS OF NONCONFORMING MATERIAL CONTROL SYSTEM

Identification

Once an item is found to be nonconforming, it cannot be used until the nonconformance is dispositioned. To prevent inadvertant use or installation of a nonconforming item, it is essential that the item be clearly identified as nonconforming. An identification method is selected which makes it apparent at a casual glance that the item is nonconforming. While the specific identification method varies among companies, acceptable methods including labeling, tagging and marking. Red or international orange colors can be used to enhance visibility of the identification and black non-fading ink should be used to fill in the tag blanks. A typical tag is illustrated in Figure 31-5-2.

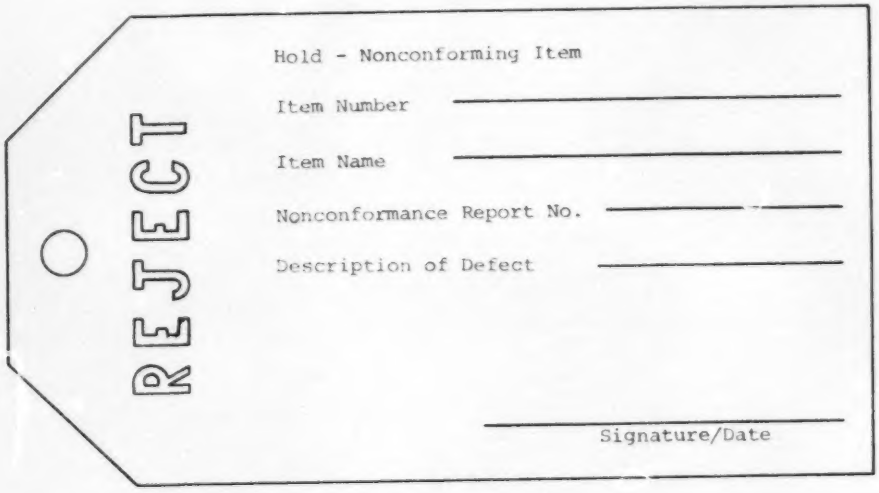


Figure 31-5-2. Example Nonconformance Tag

Material used for identification labels, tags or marking must be durable and not detrimental to the item. In this regard, adhesives used on identification labels

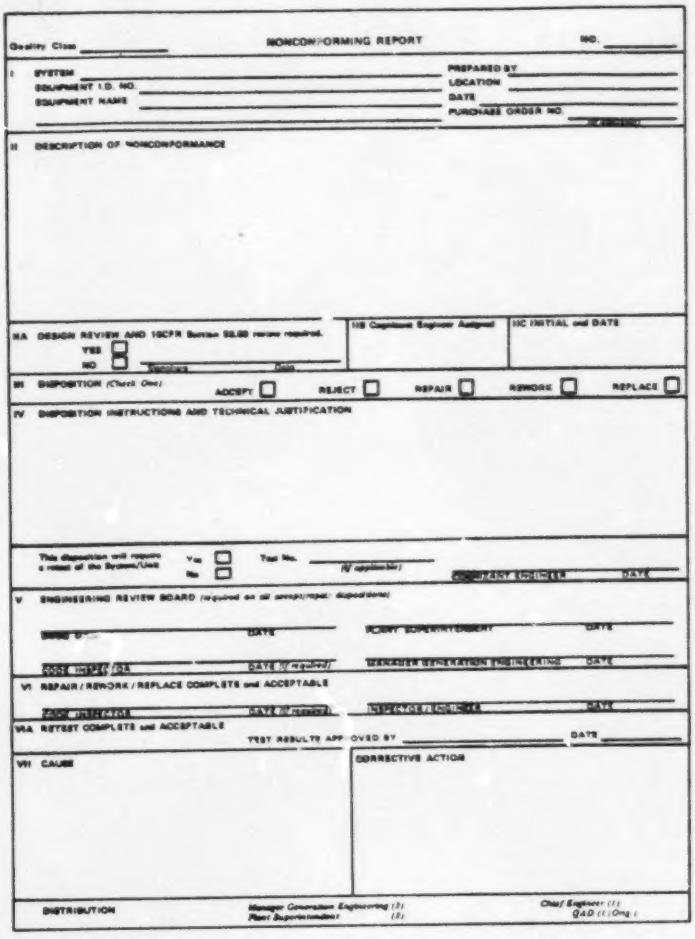
which could be used on austenitic stainless steel must be free of halogens such as chlorine and fluorine. Such halogens could cause cracking if the material is subsequently placed in a high temperature, high stress system. Tags are either metallic or of thick, stiff paper and are physically attached to the item. Marking materials are indelible and also free of deleterious materials such as halogens.

The nonconforming identification on items gives notice that such items are not to be used or installed as long as the nonconformance identification remains on the item. Therefore, this element of the control system requires that the nonconforming material control procedure establish responsibilities and methods for placement and removal of nonconformance identification. Placement of nonconformance identification is normally the responsibility of the person who performed the activity which detected the nonconformance. Responsibility for removal of the nonconformance identification is normally assigned to the same group of individuals who placed the identification on the items. However, some companies designate quality control technicians as having sole authority for removal of nonconformance identification. In any event, the identification is removed only after satisfactory correction of the nonconformance.

Documentation

Once an item is identified as nonconforming, it is logical to attempt to salvage the item if technically possible. For example, rework or repair may be less costly than replacement. Whatever happens to the item, documentation is needed to provide objective evidence that the nonconformance was either corrected or the item was not kept in service, used or installed.

Most companies use special forms for documentation of nonconformances such that a single page form provides for all necessary entries. Frequently, the forms are multi-copy forms which produce several carbon copies as entries are made on the original. Figure 31-5-3 illustrates a typical form.


Quality Class _____ NONCONFORMING REPORT NO. _____

I SYSTEM
EQUIPMENT I.D. NO.
EQUIPMENT NAME
PREPARED BY
LOCATION
DATE
PURCHASE ORDER NO.

II DESCRIPTION OF NONCONFORMANCE

IIA DESIGN REVIEW AND 10CFR Section 50.59 review required. YES NO Signature Date

IIB Cognizant Engineer Assigned

IIC INITIAL and DATE

III DISPOSITION (Check One) ACCEPT REJECT REPAIR REWORK REPLACE

IV DISPOSITION INSTRUCTIONS AND TECHNICAL JUSTIFICATION

This disposition will require a retest of the System/Unit Yes No Test No. (If applicable) COMPANY ENGINEER DATE

V ENGINEERING REVIEW BOARD (required on all accept/repair dispositions)

SHIFT SUPERVISOR DATE PLANT SUPERINTENDENT DATE

QUALITY ASSURANCE DATE (If required) MANAGER GENERATION ENGINEERING DATE

VI REPAIR / REWORK / REPLACE COMPLETE and ACCEPTABLE

QUALITY ASSURANCE DATE (If required) MAINTENANCE FOREMAN DATE

VIA RETEST COMPLETE and ACCEPTABLE

TEST RESULTS APPROVED BY DATE

VII CAUSE

CORRECTIVE ACTION

DISTRIBUTION Manager Generation Engineering (3) Plant Superintendent (2) Chief Engineer (1) QAD (1) Orig. (1)

Figure 31-5-3. Nonconformance Report

For the form in Figure 31-5-3, space is provided in the upper right hand corner to record a unique serial number for the nonconformance report. The serial number permits

reference by all subsequent actions to this unique identifier. This same number is also placed on the nonconforming tag, label, or marking identification method described previously. To avoid use of duplicate numbers and thereby maintain the cross-reference capability, companies either preprint consecutive numbers on the supply of forms or maintain a log of numbers at a central point of issue.

Sections I and II of the form in Figure 31-5-3 permit recording a description of the nonconformance. A complete description is necessary in order to assist proper dispositioning at a later time. When necessary to give a complete description, hand drawn sketches are attached to the form. The preparer signs and dates the form upon completion of sections I and II.

The remainder of the form in Figure 31-5-3 pertains to disposition and notification which are described later. In summary, documentation describes the nonconformance and records the disposition and subsequent notifications which carry out the disposition.

Segregation and Storage

In addition to identifying items as nonconforming, measures are taken to segregate nonconforming items from those which are acceptable. Segregation further safeguards against the inadvertent use or installation of a nonconconforming item by physically separating nonconforming items from conforming items.

Special storage areas are established for nonconforming items. Typically such storage areas are designed and constructed to separate by barriers, partitions and other such means, nonconforming items from those which are acceptable. Access to the "quarantine" areas is limited and no items

released without appropriate documentation. Storage conditions are maintained in a manner to prevent deterioration of the item because it may be reparable.

Physical size of items or special storage requirements may make segregation of nonconforming items impractical. In such cases, the physical identification on the item is relied upon to prevent inadvertant use.

Disposition

Disposition is the determination of destiny of the nonconforming item. A company's engineering section normally has responsibility for dispositioning nonconformances. Either the quality assurance section or a special committee reviews dispositions to assure that proper decisions have been made. In all cases, design criteria govern the dispositioning decisions.

There are four types of dispositions: accept as is, reject and replace, repair, and rework. Each of these are described as follows:

- Accept as is - A decision to accept a reported nonconformance without replacement, rework, or repair is possible for three reasons. First, the reported nonconformance may be in error, i.e., while the acceptance criteria was thought to have been violated, it was not. In such cases, the preparer of the nonconforming report probably misapplied the acceptance criteria or failed to use the proper acceptance criteria. Secondly, more stringent acceptance criteria may have been in use than required by the specified design limits. Considering the saw, "give them an inch and they will take a mile", some companies frequently work to somewhat more stringent acceptance criteria than absolutely necessary. If the inspection or test result falls outside this more stringent criteria

but within specified design limits, the reported nonconformance is accepted. Thirdly, a deviation from specified design limits may be approved by the design agency. Such deviations are approved only when the nonconformance does not affect safety, assembly, interchangeability, and function of the item.

- Reject and replace - A decision to reject and replace a nonconforming item results from an uncorrectable nonconformance or one sc costly to correct that replacement is cheaper. The disposition to reject and replace includes instructions for disposing of the item. If it is still under vendor warranty, it is returned to the vendor for replacement. If not, it may be scrapped or designated for use in another less stringent environment where it is acceptable. For example, if a valve rated at 600 psia were reported as nonconforming because it had been released for use in a 1200 psia system, it could be reassigned to another system rated at 600 psia or less. In such case, replacement is made from stores or by procurement of a replacement item.
- Repair - A decision for repair is based on the ability to bring the item to a conforming status via a repair process. Such repair processes include welding, brazing, heat treating, and forming. Whenever repair is specified, repair instructions are delineated on the nonconformance report or by referencing a specific repair procedure. The instructions include inspection of the repair.
- Rework - A decision to rework the item is based on the ability to bring it to a conforming status via normal processing. Rework differs from repair in that it involves only the original processing

steps to bring the item to a conforming status. Repair involves processing steps that were not originally planned. For example, if an outside diameter is found to be oversize, rework by repeating the original machining step is done. Similarly, if washers on threaded fasteners are missing, rework is accomplished by repeating the assembly procedure.

The basis for each disposition is documented by the dispositioner. The basis may be pre-established in the form of design documents, codes and standards. If these technical documents do not establish a basis for accept as is, rework or repair dispositions, there remains two alternatives: reject and replace or review design. For the first alternative the item will not be used or installed and no further basis is needed. For the second alternative, a design review establishes the technical basis for accept as is, rework or repair dispositions. In Figure 31-5-3, sections IIA and IV of the sample form are used to document design review.

Whenever rework, repair or replacement dispositions are made, the disposition also determines if previously completed tests are affected and specific inspections of the reworked, repaired or replacement item. The disposition indicates on the nonconforming report what tests, if any, need to be repeated. For example, if a valve passed hydrostatic test but required replacement of the disk due to excessive seat leakage, another hydrostatic test would be needed after installation of the replacement disk. Inspection of the reworked, repaired or replacement item is intended to not only insure that the nonconformance is corrected but also to determine that no other nonconformance was generated in the process. A replacement item receives the same complete inspection that the original item received. A reworked or repaired item receives inspection based on the

method of rework or repair. For example, if rework by machining is accomplished, the feature that was machined and feature(s) that interface with the machined surface are inspected. In this regard, machining of an oversized outside diameter requires subsequent inspection of the diameter, wall thickness, concentricity, roundness and run out if these were all drawing features. For another example, repair by welding normally includes non-destructive testing for weld integrity and dimensional inspection for distortion.

To assure all the above considerations occur, the nonconforming material control procedure assigns responsibilities for:

- Dispositioning decision including evaluation of retesting and the recording thereof
- Reviewing and approving the decision of the disposition
- Designating or preparing repair instructions
- Designating rework instructions
- Accomplishing inspections of repaired, reworked and replacement items
- Accomplishing testing of repaired, reworked and replacement items.

Notification

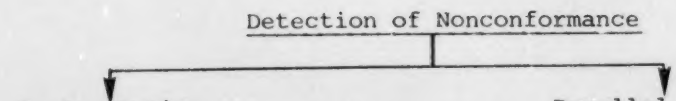
Notification is the reporting of nonconformances to persons or companies designated as responsible for acting on nonconformances in some manner. This essential element spans the notifications from time of detection of a nonconformance until time of correction and removal of the nonconforming identification on the item. Its purpose is to trigger action by each responsible person or company upon receiving notification.

Notification and corresponding actions have a strong tendency to occur in series. The inspector initiates a

nonconformance report. The report is sent to the dispositioner. The dispositioner may correspond with the design agency. After disposition, the report is sent to the review committee who may in turn send it back to the department that caused the nonconformance. The responsible department enters cause and corrective action on the report (see Figure 31-5-3) and sends it to quality assurance for concurrence. Quality assurance sends the form back to the responsible department for carrying out the disposition. If replacement is needed and if a replacement item is not on hand, a replacement item must be purchased. This brings to play the pertinent procurement actions described in modules 31-1, 31-2, 31-3, and 31-4 with respect to requisitions, purchase orders, if there are delays in this process, quality assurance, inspection and handling. Meanwhile, the schedule coordinator is becoming frustrated with an item identified as nonconforming but not yet corrected. In fact, months can elapse before the item is corrected or replaced.

When schedules dictate rapid correction of nonconformances, the nonconforming material control system is severely tested. Its effectiveness depends on its ability to quickly disposition items when speed is important while at the same time preventing use or installation of the nonconforming item prior to correction. To help meet these goals, two features can be added to the system: parallel actions whenever possible and central coordination of actions.

Certain actions within the nonconforming material control system must be taken in series. These are the steps to disposition, review and approve the disposition, implement the dispositioning instructions, and inspect or test the item. Most other actions can be taken during the same time interval as these steps. Figure 31-5-4 lists typical series and parallel actions.



Series Action	Parallel Actions
1. Disposition	1. Identify cause and corrective action to prevent recurrence
2. Review and approval of disposition	2. Preparation of repair procedures
3. Correction in accordance with disposition instructions	3. Preparation of inspection and test procedures
4. Inspection and test of rework, repair or replacement	4. Purchase of replacement items

Figure 31-5-4

Series and Parallel Actions of Nonconforming Material Control System

Assignment of a central coordinator permits one individual to track and expedite all necessary actions. This individual insures that items having highest priority receive first attention. Also, where necessary, this individual "walks" the nonconformance report through the system to expedite necessary actions. The ability to quickly disposition nonconformances when necessary, increases confidence in the workability of the system. This increased confidence helps to develop a desire by all departments to follow the system.

Parallel actions and central coordination are not workable without proper notifications. In general, notifications are necessary as follows:

- Copy of nonconformance report to the department responsible for the item. This copy is sent by the preparer of the report. It permits the department to determine the effect of the nonconformance on depart-

ment activities. It permits the responsible department to quickly determine cause and implement actions to prevent recurrence. Also, if it is obvious that a repair procedure will be needed, procedure preparation can immediately commence.

- Copy of nonconformance report to central coordinator. The central coordinator receives a copy at the time the nonconformance report is prepared and again after acceptance of the disposition. The first notification identifies an item to be tracked and the second identifies that the dispositioning instructions can now be carried out.
- Copy of dispositioned nonconformance report to quality assurance and test departments. This alerts these departments of inspections and for tests that will be needed. Necessary inspection and test procedures are prepared to coincide with the rework, repair or replacement actions.
- Copy of dispositioned nonconformance report to purchasing when replacement is the disposition. This permits early order of a replacement item. Copies of all serious nonconformances should go to company management.

All of the foregoing notifications have dealt with notifications within a company's organization. There are two additional notifications outside the company which may be required. These are notifications to (1) obtain customer approval of dispositions and (2) report nonconformances to the Nuclear Regulatory Commission (NRC).

Suppliers are typically required by procurement documents to obtain purchaser approval of the dispositions of certain nonconformances. In such cases, the dispositioned nonconformance report is forwarded to the purchaser for approval. Purchaser approval of nonconformance reports is

typically required whenever the nonconformance involves (1) violation of technical or material requirements of procurement documents, (2) violation of a purchaser approved document, (3) repair, and (4) a condition of nonconformance after rework or repair although the function of the item is unimpaired.

Title 10 of the Code of Federal Regulations, Parts 21 and 50 require the reporting to NRC nonconformances and failures pertaining to plant safety. Utilities typically require suppliers to make such reports to the utility who, in turn, submit required reports to the NRC. Since failures are normally handled via a nonconforming material control system, a mechanism is needed for issuing reports to NRC when required. The engineering organization that dispositions nonconformances or a separate engineering section has responsibility for reporting to NRC. In either case, a copy of the nonconformance report is sent to the responsible group for use in meeting this reporting requirement.

SPECIAL PROVISIONS

Types of Special Provisions

In addition to the five essential elements of a nonconforming material control system, special supplementary provisions are adopted by many companies. The company's quality assurance program describes the responsibilities and procedures for special provisions. Typically, three special provisions are included. These are (1) hold notices, (2) stop work orders, and (3) conditional releases.

Hold Notices

Hold notices are used for items suspected of being nonconforming but which require further investigation to make a determination. The purpose of a hold notice is to prevent further work on a particular item suspected to be nonconforming until a complete investigation is made. Work on everything else can continue. For example, an inspector may notice that one piece of many that are being welded does not have identity marking. A hold notice is issued and a hold notice tag is attached to the one piece. Welding of the remainder of the pieces continues. The inspector then determines if the identity of the piece can be established. If so, the piece is released for use by removal of the hold tag. If not, a nonconformance report is issued which replaces the hold notice and results in disposition of the item.

As another example, in the use of a hold notice, an inspector discovers that the assembly of an emergency core cooling pump is not following the approved procedure, a hold notice is issued and assembly stops. An investigation determines what effect the noncompliance has on the assembly. It may be necessary to disassemble all,

or a portion of the pump and reassemble it according to procedure to ensure that the pump has been properly assembled.

Use of a hold notice is typically limited to those instances where the persons performing the QA activity can independently make the necessary investigations. If assistance by other departments is necessary, the item is treated as a nonconformance and investigation is made via the dispositioning actions on the nonconformance report.

Stop Work Order

A stop work order results in the immediate cessation of a work activity. Its purpose is to halt an activity that is obviously causing or about to cause nonconformances. As an example, concrete is being poured for the foundation of a reactor containment structure. It is discovered by an inspector that the aggregate report used to authorize concrete pouring represents a different batch than that being used. A stop work order is issued. The job foreman shall be immediately notified of the situation. All concrete work on the containment is brought to a halt pending an evaluation. It is noted that many man-hours and dollars can be lost as a result of such a stop work order. However, if the nonconformance had not been discovered, rectification of the problem at a later time could be far more costly. The example could conceivably result in dismantling and rebuilding much of the containment structure.

It should be evident that stop work orders are not issued indiscriminately. Detailed analysis of the situation is necessary to determine that such extreme action is warranted. Normally, the Quality Assurance Manager must concur in the issuance of stop work orders. Notification of higher management may also be required.

CONDITIONAL RELEASE

A special type of supplementary disposition is the conditional release. Its purpose is to authorize limited use of the item pending completion of disposition in order to avoid schedular delays.

The conditional release system must insure that the item can be corrected and that it is in fact eventually corrected. The technical justification for the release is entered on the nonconformance report and conditional release is entered as a special instruction. Normally, the date or future sequence by which the nonconformance must be corrected is also entered. The person or committee who reviews dispositions then rules on the dispositioner's recommendations. If the conditional release is granted, quality control places a special tag or label on the item indicating its conditional release status and other pertinent information such as date or event by which correction must be accomplished. A log is normally maintained to list outstanding conditional releases and to permit followup actions that insure correction occurs. At the future time that disposition is completed, an inspection or test is conducted to verify compliance with the disposition. Acceptance is documented on the nonconformance report and the conditional release tag or label is then removed.

The conditional release system has many applications. In essence, it helps to avoid schedular delays which might otherwise result from the processing of nonconformance reports without conditional releases. Examples include release to continue manufacturing or installation up to a point where any possible disposition can still be carried out, release for use pending purchaser approval of the

disposition, and release for use pending design review. As indicated by these examples, risk is involved with conditional releases. Normally, the engineering group responsible for dispositioning nonconformances is also responsible for authorizing conditional releases. Such authorization is based on the engineering estimate that conditional release represents little risk. If great risk is anticipated, conditional releases are normally not used and the nonconforming item remains segregated until final dispositioning.

SUMMARY

In summary then, this module has emphasized the following points regarding nonconforming materials.

____ Nonconformance is a deficiency in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminate.

____ The nonconforming material control system controls nonconforming items from point of identification to point of correction in such a manner as to prevent the inadvertant use of nonconforming items.

____ The essential elements of a nonconforming material control system are (1) identification, (2) documentation, (3) segregation and storage, (4) disposition, and (5) notification.

____ Identification is the physical tagging, labeling, or marking of nonconforming status which is clearly visible in order to preclude the inadvertant use of nonconforming items. Identification is removed upon completion of all dispositioning instructions.

____ Documentation consists of the description of nonconformance and all dispositioning actions and notifications. It provides objective evidence that the nonconforming item is either corrected or replaced.

____ Segregation and storage is the physical separation of nonconforming and conforming items under conditions of storage which protect the items from environmental damage. It further safeguards against the inadvertant use of nonconforming items.

____ Disposition determines the destiny of nonconforming items. Potential dispositions include (1) accept as is, (2) reject and replace, (3) repair, and (4) rework. Disposition identifies all appropriate instructions and tests of repair and rework.

____ Notification reports nonconformances to responsible persons and companies and triggers their actions as described by the nonconforming material control procedures. Notifications ensure that as a minimum, activities are carried out for disposition, review of disposition, implementation of disposition, and inspection and test of rework, repair or replacement.

____ Notifications external to a company include (1) requests for purchaser approval of dispositions and (2) reports to the NRC on nonconformances and failures.

____ Hold notices are sometimes used to prevent further use of a specific item until an investigation on the acceptability of the item can be completed.

____ Stop work orders suspend activities which are causing or about to cause nonconformances.

____ Conditional releases are authorizations for limited use of nonconforming items pending completion of all dispositioning actions.

EXERCISES

The following exercises serve to reinforce the concepts presented by this module.

1. Obtain from the instructor a copy of a company's procedure for the control of nonconforming items and compare the content of the procedure with that of this module. Note additions and omissions and offer rationale for each.
2. Obtain from the instructor a copy of a company's procedure for the control of nonconforming items and list the name and purpose of each record format required by the procedure. Compare the purposes of these records with the essential elements of a nonconforming material control system as described by this module. State if adequate provisions are made for documentations and justify your determination.
3. Explain the overall purpose of a nonconforming material control system.
4. List five essential elements of the nonconforming control system and briefly describe the role of each.
5. Briefly explain why a nonconforming item must be tagged as being nonconforming.
6. Of what use is a nonconformance report?
7. Describe the typical contents of a nonconformance report.
8. Explain what is meant by a conditional release.
9. What is the purpose of a hold notice.
10. State the purpose of a stop work order.

MATERIALS

The following materials are required to support this module.

1. Copies of various companies' procedures for controlling nonconforming items.
2. Sample tags, labels, and record forms used for documentation within a nonconforming material control system.

PROCEDURES

Not applicable.

DATA TABLE

Not applicable.

REFERENCE MATERIALS

GPO, Code of Federal Regulations, Title 10, Energy, Parts 0-199, U.S. Government Printing Office, 1978

ASME, Quality Assurance Program Requirements for Nuclear Facilities, ANSI N45.2, The American Society of Mechanical Engineers, 1977

ASME, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants, ANSI N18.7, The American Society of Mechanical Engineers, 1976

Juran, J.M., Quality Control Handbook, McGraw-Hill, 1974

1. Define:
   a. Nonconformance

   b. Identification

   c. Documentation

   d. Segregation

   e. Disposition

   f. Notification

2. State the overall purpose of the nonconforming material control system.

3. List five essential elements of the nonconforming material control system and briefly describe the role of each.
   a.

   b.

   c.

   d.

   e.

4. Why is a nonconforming item tagged, labeled or marked as being nonconforming?

5. When can a nonconformance tag be removed from an item?

6. State the purpose of serializing nonconformance reports.

7. List four possible dispositions of a nonconformance report and describe the meaning of each.
   a.

   b.

   c.

   d.

8. Briefly describe the two notifications of nonconformances made external to the company whose product is found to be nonconforming.

9. Describe the contents of a typical nonconformance report.

10. State the purpose of a conditional release.

11. State the purpose of a hold notice.

12. State the purpose of a stop work order.